

Technical Memorandum - PageNet

Adverse allegations, terminating compensation, FCC Docket 95-185

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Supplementing the pre-divestiture Bell Laboratories definition, and in concert with the Bellcore documents cited, the Industry Carriers Compatibility Forum (ICCF) and the FCC-endorsed Industry Numbering Committee (INC) has, at Page 23 of the recent revision of the *Central Office Code (NXX) Assignment Guidelines*, Document INC 95-0407-008 (formerly ICCF 93-0729-010), Revision of 7 April 1995, defined "switching entity" as "an electromechanical or electronic system for connecting lines to lines, lines to trunks, or trunks to trunks for the purpose of originating/terminating PSTN calls. A single switching system may handle several central office codes". Again, all of PageNet's paging switchgear provides functionality which conforms to this definition.

**Calls "terminate" with paging end users, not in the paging switch:**

Those in the opposition who may concede that in fact, paging terminals may just qualify as network switching entities, still argue that paging switchgear and paging carriers do not perform the "call terminating functions" which other "co-carriers" perform. This opposition lacks any basis for its statements.

As an initial matter, if paging calls "terminated" in a paging terminal or in the paging switch or end office (hereinafter "paging switch") rather than with a destination end user, a PSTN-handled message destined to a paging end user simply would not be capable of advancing past the paging switch. The intended end user would never receive his page ... it is just about that blatant.

Paging carriers and paging systems do, in fact, perform all call terminating functions performed by any wireless cellular/SMR/ESMR/PCS (generally, CMRS) carrier, competitive wireline carrier, or conventional Bell or independent wireline carrier, and do so in the same manner. For any local service provider, the "identical" terminating functions are, without exception, ...

1. the terminating service provider must receive the call and the unique identity of its addressee/destination at some point of traffic interchange (POI) with another telecommunications company
2. the terminating service provider must transport that call and its address information from the point of traffic interchange to its end office switching entity

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3. the terminating service provider may, for economic, operational, or technical purposes, elect to aggregate traffic from points of interchange with different tributary service providers to potentially multiple "in-company" destinations through its own "terminating 'access'" tandem switching system(s). Tandem switching is a discretionary capability which typically is lumped together with performance of the overall "terminating 'access'" function
4. the terminating service provider must receive the call service request and address/destination information in its end office switching entity in a compatible, standard format
5. the terminating service provider end office must examine the address/destination information for ...
  - a. being a valid address, and if the address is invalid, providing advisory of that fact to the caller
  - b. being an address which is indeed in service, and if the address is not in service, providing advisory of that fact to the caller
  - c. determining that a path can be established for continuing movement of the call toward its addressee/destination, and if the path is not in service, providing advisory of that fact to the caller
  - d. establishing requirements for translation and/or encoding of the address and destination information into forms compatible with the systems' end users and loop-medium/post-switching selection methodology
6. Once the terminating service provider end office has examined the address/destination information, the end office must ...
  - a. connect (i.e.: switch) the call to the path chosen and reserved by the path determination function noted above
  - b. commence actually alerting the end user of the presence of a call, assuming that the call remains within the switching system and is not forwarded elsewhere

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- c. issue an electrical/electronic report of successful connection of the call to its destination addressee to the call sender to indicate that charging has commenced
- d. compatibly convey the call information content to its addressee
- e. monitor the call for disconnection or additional service request signals and perform those additional functions as appropriate
- f. disconnect the call when appropriate

And again, all of PageNet's paging switchgear provides functionality which conforms to these definitions.

**Other interesting but unfounded allegations:**

Turning to the more abstract anti-paging-co-carrier-status allegations, at least one local jurisdiction only considers carriers which have both call originating and call terminating functionalities, and originating call access to operator services and to E-9-1-1 services as carriers eligible for terminating compensation. In the paging services, which in few cases exhibit less than wholly terminating traffic, and which possess effectively no real-time voice transmission capability, basing eligibility for receiving terminating compensation upon bi-directional traffic handling capability is, in the most favorable terminology, novel. Normally, if one uses another's service, one pays for it.

Further, paging is entirely incompatible with and incongruous to E911 service. E911 is a service based solely on the ability to originate an emergency call using abbreviated, standard format dialing, wherein the caller is automatically associated with and wholly identified by the fixed, land location and governmental jurisdiction within which the calling telephone number is situated. Thus identified, E911 calls are routed to the pertinent E911 PSAP (public safety answering point). Paging end users are by definition, itinerant, and have no inherent or derivable means of establishing even rough geographic situation data. Moreover, with the possible exception of some narrowband PCS equipments<sup>10</sup> still under development, paging customers cannot originate any calls using paging equipment or a paging system. In short, E911 is, at least at this time, irrelevant to paging services.

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<sup>10</sup>

Such systems are sometimes referred to as "two-way-paging".

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As noted, the FCC has stated unequivocally that CMRS (Commercial Mobile Radio Service) paging carriers licensed under Parts 22 or 90 of its Rules are as entitled to mutual [terminating] compensation as any other FCC licensed CMRS provider for traffic terminated on behalf of another telecommunications entity. There is no requirement or equivocation favoring bidirectionality of traffic flow. In fact the Order quite specifically and simply reads that any wireless carrier shall be compensated for traffic delivered to it for termination by another carrier, a position supported by a long supporting lineage of predecessor rulings and Orders.

**Summary:**

Paging carriers, like all CMRS licensees, are positioned with the PSTN as fully capable and responsible exchange service providers, entitled to receive terminating compensation for all traffic handled for other carriers, such compensation reflective of the uniform application of a standard set of rate elements for all exchange service providers to the economic and operational specifics pertinent to the particular carrier.

Paging carrier switching machines are fully qualified end office "switching entities" in the PSTN performing all necessary network "terminating 'access'" functions. Calls handled by paging switches terminate with their intended destination end user, not within the paging switch as alleged by some. LEC "requirements" for qualification for terminating compensation based upon bi-directional traffic propagation capability, access to operator services, and/or E-9-1-1 capability are irrelevant and unfounded.

CMRS paging carriers, e.g : PageNet, are as entitled to terminating compensation as any other FCC licensed CMRS provider.

Jan David Jubon, P. E.

COMMENTS OF PAGING NETWORK, INC.  
CMRS INTERCONNECTION  
CC DOCKET NO. 95-185  
MARCH 4, 1996

## **Appendix E**

Re

In the Matter of

Interconnection Between Local       )  
Exchange Carriers and Commercial )  
Mobile Radio Service Providers       )

CC Docket No. 95-185

**Memorandum**  
**Terminating Compensation**  
**for Paging Carriers**

**Submitted by**  
**Mark Drazen**

**On behalf of**  
**PageNet**

**DRAZEN**  
CONSULTING GROUP

March 1, 1996

## **PART I**

### **Terminating Compensation for Paging Carriers**

Compensation between interconnecting local exchange companies (LECs) and paging carriers must recognize the singular nature of paging traffic and the competitive position of paging carriers in relation to other commercial mobile radio service (CMRS) providers. The common principles used in other industry compensation arrangements must be applied to the specific circumstances of paging. Considering the competitive position of the various market players ensures fair treatment so that no carrier is placed at a competitive disadvantage, thus promoting competition in general.

Current “compensation” arrangements require paging carriers to bear the full cost of the carrier-to-carrier (i.e., LEC-to-paging) interconnection facilities. In addition, some LECs also charge paging carriers the equivalent of “originating access” charges—that is, they charge for terminating LEC-originated calls. This is exactly opposite to the idea of terminating compensation, where a carrier is compensated for its costs of terminating a call originated on another carrier’s system. A “bill and keep” arrangement, such as the Federal Communications Commission (hereinafter, Commission) is considering for cellular and personal communications services (PCS) in its *Notice of Proposed Rulemaking*, released January 11, 1996 (hereinafter, Notice) may relieve part of the LEC-paging carrier inequity—if applied appropriately—but exacerbates (or creates) a separate problem

of competitive disadvantage to paging-only carriers vis-a-vis two-way CMRS carriers (e.g., PCS and cellular). That problem arises because of the role paging (or paging-like) services play when offered together with PCS or cellular service. For example, PCS offerings now include paging services combined with two-way communications service features.<sup>1</sup> Unless inter-carrier facility charges to paging carriers are eliminated and terminating compensation is provided for paging-only carriers, a reciprocal compensation plan for two-way CMRS carriers places the paging-only carrier at a competitive disadvantage. Using bill and keep as a reciprocal compensation plan would give cellular and PCS carriers compensation for paging traffic while paging-only carriers would continue to be charged for paging traffic.<sup>2</sup>

Unlike PCS and cellular telephone carriers, where the two-way nature of traffic can make bill and keep a workable method of “reciprocal” compensation, paging traffic is virtually all one-way, with the paging carrier terminating land-to-mobile calls and the LEC terminating almost no mobile-to-land calls.<sup>3</sup> As the Commission has noted bill and keep is a simple, workable method for two-way traffic *when traffic is roughly balanced in each direction*—or at least moving in that

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<sup>1</sup>Sprint Spectrum, an affiliate of American Personal Communications, offers a personal communication system featuring a personal phone, answering machine and pager—all in one handset. The answering machine and pager feature is included *free*.

<sup>2</sup>Cellular carriers (and specialized mobile radio/enhanced specialized mobile radio, PCS and conventional two-way CMRS providers) can provide competitive one-way paging using telephone numbers from the same central office code (NPA-NXX) resource(s) assigned for their use in cellular (and/or other two-way) service(s).

<sup>3</sup>Paging carriers are now offering “two-way” paging, when the pager returns a brief “acknowledgment” of the paging signal. Even with this, the vast majority of the traffic for the next several years will be land-to-mobile.



direction.<sup>4</sup> It is imperative, therefore, that the Commission not implement a reciprocal compensation plan for two-way CMRS, without also implementing an effective economically comparable compensation plan for one-way paging.

An equitable basis for compensation between LECs and paging carriers is required. This has two parts. First, LECs should not charge paging carriers for the carrier-to carrier interconnecting facilities that carry traffic from the LEC network to the paging network. Second, terminating compensation should be paid to paging carriers. Therefore, an economically efficient compensation plan for paging carriers requires

- The LEC to assume responsibility for the cost of the entire transmission facility used to carry originating traffic from the LEC network to the paging carrier's MTSO; and
- The paging carrier to be compensated for its switching and transport costs of terminating LEC-originated calls.

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<sup>4</sup>Notice at ¶ 61.

## PART II

### Industry Compensation Principles

#### A. Goals

Principles and methods for determining carrier compensation must recognize that *appropriate compensation is critical for effective competition*. Competition can be squelched by the denial of access. However, even where interconnection access is permitted, competition can be impeded by inappropriate charges. The goal, therefore, should be to develop compensation approaches that maximize competition. In this respect, it is important to recognize that end users benefit from greater competition overall. The archaic view that competition will “reduce the revenues of the LEC” to the detriment of LEC customers and universal service has largely been discredited<sup>5</sup>—but significant pockets of this thinking still remain.

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<sup>5</sup>The Court reversed a ruling by the Wyoming Public Service Commission that denied mutual compensation between cellular carriers and the wireline carrier. The decision affirmed the benefits of cellular interconnection to all telecommunications end users:

. . . [T]he benefit of interconnection does not accrue disproportionately to the cellular customer *when he receives a call placed by a US West subscriber*. . .

\* \* \*

It is the US West customer who chooses to make this type of call and who thus receives much more than a *de minimus* benefit. In fact, the US West customer benefits at least as much as the Union Cellular customer from the ability to complete the call. (In the Supreme Court, State of Wyoming, *Union Telephone Company, Inc. v. Wyoming Public Service Commission*, et al, No. 91-110 (1992.)

## ***B. Current Industry Compensation Methods***

The current telecommunications industry employs a variety of compensation methods, some reciprocal, some one-sided, some explicit, some implicit. Not all of these are consistent with a pro-competitive policy, but the various methods display some common principles that are relevant for formulating co-carrier compensation policies for paging and, more generally, for all CMRS providers.

### ***1. Compensation Between Neighboring LECs***

Compensation between LECs for the interchange of most traffic, whether local or toll, uses the principle of **end-to-end call responsibility**.<sup>6</sup> The premise is that one carrier is responsible for setting rates for a call, collecting the originating end user revenues for that call and paying compensation to the other carrier(s) involved in the completion of that call.

The LEC that originates a call also assumes "financial responsibility" for the call. The carrier interaction is transparent to the LEC end user. Figure 1, a diagram of this method, shows the physical components of interconnection and the functions eligible for compensation.

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<sup>6</sup>Extended area service (EAS), a tariffed LEC calling plan, places otherwise short-haul toll traffic within an LEC's "local service" area, permitting the LEC to expand its toll-free local calling scope. The monthly local service charge to the end user is increased to reflect the enlarged local calling area. When EAS is offered between neighboring LECs, a compensation method often used is "ORP" or "Originating Responsibility Plan." The premise for end-to-end call responsibility is the same under ORP as it is with the interchange of short-haul toll traffic between LECs.

## LEC-LEC Method

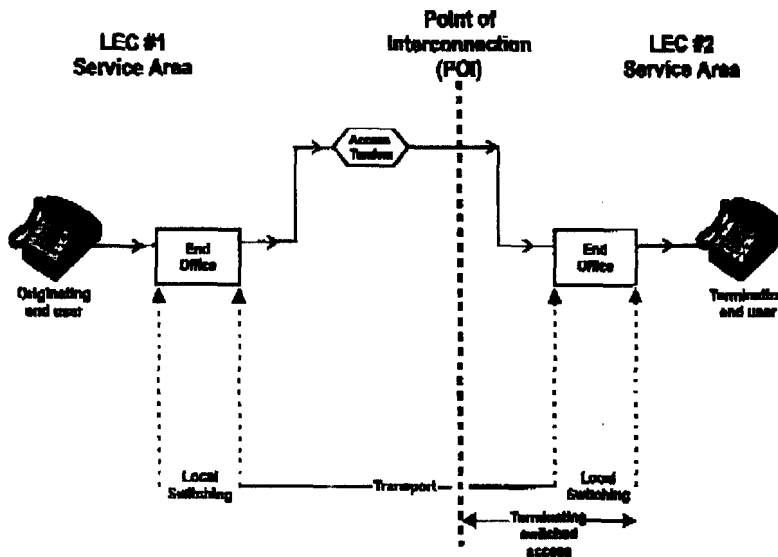


Figure 1

If a customer of LEC #1 calls a customer of LEC #2, the financially responsible carrier is LEC #1, who collects the revenues for the call and pays terminating access to LEC #2.

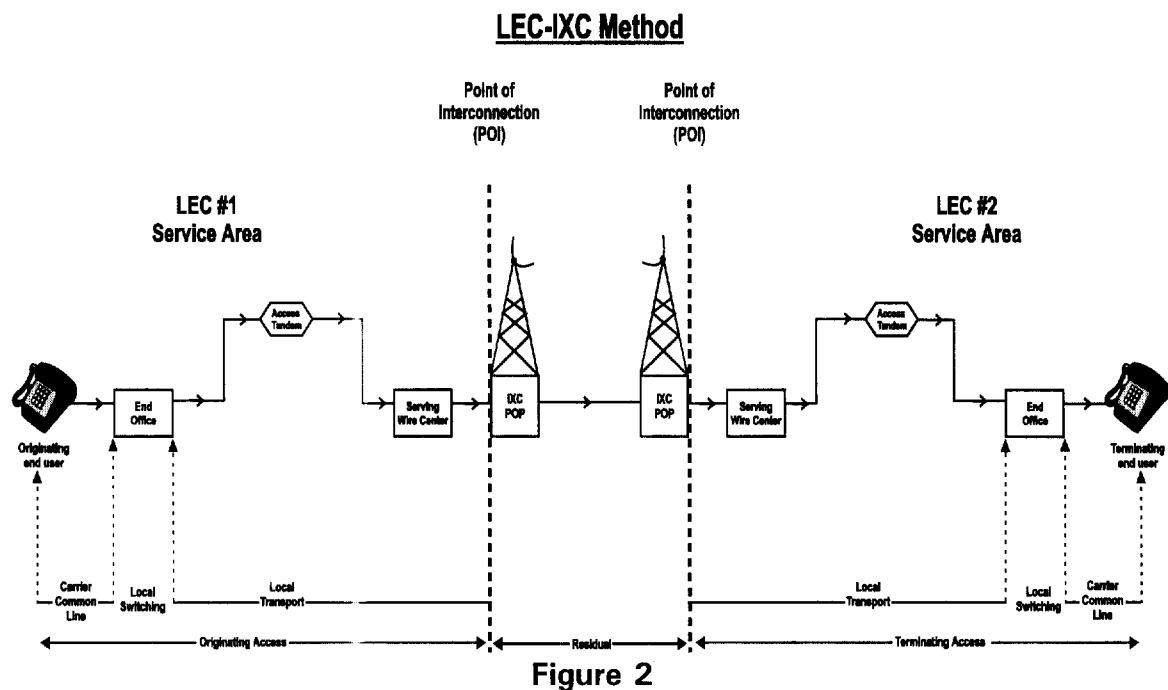
Each carrier is compensated for its service out of revenues from the end user. With EAS, the compensation is implicit. With terminating access, it is explicit.

### **2. Compensation Between LECs and IXC's**

LEC-to-IXC compensation takes a different form. The distinguishing characteristic is that the originating carrier and "financially responsible" carrier are different. The LEC is the "originating" carrier in a physical sense, but it is the IXC that sets the rates, collects the revenue<sup>7</sup> from the originating end-user and pays the LEC *on each end*. The IXC, then, assumes financial responsibility for the end-to-end call. Each carrier gets compensation, but the flow of dollars differs from the

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<sup>7</sup>The IXC may opt to have the LEC perform the billing and collecting functions for the IXC. In such cases, the LEC is merely acting as a billing and collecting agent for the IXC. The arrangement is convenient for the originating end user, who can receive one bill detailing both local and long distance charges.



LEC-to-LEC situation. However, the carrier interaction is transparent to the LEC end user. Figure 2 diagrams the physical components of interconnection for this method and shows the division for compensation.

### **3. Compensation Between LECs and Competing Wireline Providers**

The development of competitive *local* service providers (CAPs—"competitive access providers") has required the development of compensation where the providers share the same service area. CAPs have negotiated a variety of reciprocal compensation arrangements in several states for handling the interchange of local traffic. Although these arrangements vary in form, they adhere to the end-to-end call responsibility principle and closely resemble

the LEC-to-LEC method; i.e., the LEC originating carrier sets the rates, collects the revenue from the originating end user and pays the CAP for terminating the call.

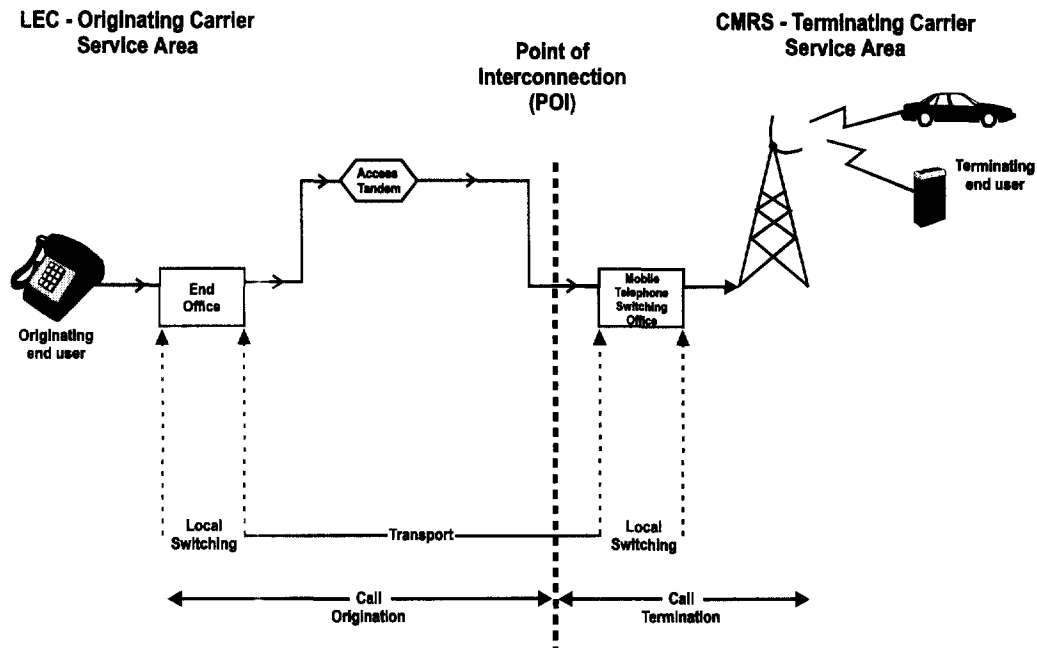
#### ***4. Compensation Between LECs and CMRS Providers (Cellular/Paging)***

Practically since the inception of cellular service, CMRS providers have sought reciprocal compensation from LECs, but, until recently, have had limited success. For the interconnecting trunks, some LECs have agreed to share the cost in proportion to traffic in each direction. For usage, the principle of choice for cellular carriers has been bidirectional end-to-end call responsibility. Historically, the LECs, have applied the principle *only* in one direction. With mobile-to-land traffic the cellular carrier is the “originating” carrier *and* the “financially responsible” carrier for collecting the revenues from the originating customer and paying the LEC for terminating its calls. The LEC, on the other hand, has not compensated the cellular carrier for its costs in terminating land-to-mobile calls.<sup>8</sup> In other words, LECs have desired “bill and pay” for mobile-to-land calls, but “bill and keep” for land-to-mobile calls. Figure 3 diagrams the LEC-to-CMRS method showing the physical interconnection and the functions performed by each carrier.

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<sup>8</sup>Most LECs do not pay terminating compensation to cellular carriers. Bill and keep would provide implicit compensation by removing charges for terminating mobile-to-land calls.

## LEC-CMRS Method



**Figure 3**

LECs treat paging carriers differently than cellular. LECs have required paging carriers to pay the entire cost of interconnecting trunks. For traffic, several LECs have effectively imposed charges on the paging carrier for termination of a land-to-mobile call.<sup>9</sup>

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<sup>9</sup>The LEC imposes the *equivalent* of originating access charges (although not necessarily using access charges themselves). This practice is particularly egregious given that many calls to pagers result in stimulated usage of the LEC local network—responding calls from pagers use landline, coin and cellular telephone instruments.

## **Part III**

### **The Basis for LEC-Paging Interconnection and Compensation**

#### ***A. Industry Principles for Carrier Compensation***

The industry principles for carrier compensation provide that (1) the cost of transmission facilities connecting the LEC network and the paging network should be borne by the LEC, and (2) there should be compensation to the paging carrier for terminating LEC-originated calls.<sup>10</sup> Both components result from the fact that virtually all LEC-paging carrier calls are land-to-mobile and, therefore, are terminated by the paging carrier. The application of end-to-end call responsibility recognizes paging carriers as co-carriers with the same rights as all other co-carriers, but with unique characteristics. The logical conclusion is that terminating compensation to the paging carrier is appropriate and should be a provision of any CMRS compensation plan.

#### ***B. Charges for the Dedicated Inter-Carrier Transmission Facility: LEC-Owned***

Typically, the transmission facility connecting the LEC network and the paging carrier network is provided by the LEC. Although the Commission suggests that the cost of a “dedicated facility” is directly attributable to the party to whom it is dedicated,<sup>11</sup> the LEC-paging interconnecting facility is the same as a

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<sup>10</sup>This includes calls originated by any other carriers which transit the interconnecting facilities for termination on the paging carrier’s network.

<sup>11</sup>Notice at 43.



LEC-to-LEC interconnecting facility. The LEC—the “originating” carrier—collects the end-to-end revenues for the calls. The LEC maintains the necessary facilities enabling its customers to originate and terminate calls within the LEC’s serving area regardless of whether those calls terminate at a landline end office or at a MTSO. It is the LEC’s customers who choose to make the paging and/or cellular land-to-mobile calls.

In its Notice, the Commission states that the dedicated transport facilities between the LEC and IXC networks are similar or identical to the facilities connecting LEC and CMRS networks.<sup>12</sup> Hence, the tentative conclusion is that when LECs provide the dedicated transmission facilities between the CMRS MTSO and the LEC networks, it is appropriate for the LECs to charge the CMRS providers the appropriate dedicated transport rates found in their existing access tariffs. For interconnection between co-carriers, however, the CMRS providers should only pay for their proportionate share of these facilities, based on directional usage.

While the facilities may be physically the same or similar, the responsibility for the LEC’s provision of these facilities when interconnecting with a paging carrier is different than that of the LEC’s interconnection with an IXC. With LEC-to-IXC compensation, the IXCs assume financial responsibility for the calls they originate, since they set the rates, collect the revenues for the end-to-end calls and compensate other involved carriers in the form of access charges for their part in either originating or terminating these calls. LEC charges to an IXC for dedicated facilities connecting the LEC and IXC networks cover the LEC’s total cost

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<sup>12</sup>Notice at ¶ 64.

of those facilities and the LEC is due no other compensation for the cost of those facilities.

***C. Charges for the Dedicated Inter-Carrier Transmission Facility:  
CMRS Carrier-Owned***

The transmission facilities required to carry LEC-originated calls from the LEC network to the paging carriers' MTSO include any direct connecting trunks from a LEC switching office to the MTSO. Any technical distinctions among different types of interconnection are secondary considerations. In fact, the availability of specific interface types is often determined by the LEC's convenience and, thus been beyond the control of the interconnecting CMRS co-carrier.

Charges for inter-carrier facilities should be prorated based on the relative directional traffic levels carried over these facilities. For paging carrier interconnection, this means that the LEC would be responsible for most, if not all, of the cost of these facilities with no (or little) charge to the paging carrier. Cellular, PCS, and other CMRS providers would compensate the LEC based on the proportion of the traffic that is mobile-to-land. This practice is not uncommon in cellular interconnection arrangements today.<sup>13</sup> If a paging carrier is charged the LEC's full tariff rates for the dedicated facilities between the LEC and paging networks, the LEC should pay compensation to the paging carrier for that portion

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<sup>13</sup>Southwestern Bell and Cincinnati Bell cellular interconnection tariffs are examples where recurring charges for the provision of two-way dedicated transmission facilities are prorated according to the relative volume of originating and terminating traffic interexchanged over those facilities.

of the facility applicable to traffic sent by the LEC and terminated by the paging carrier.

What should a paging carrier be paid for?

#### ***D. Terminating Usage Compensation***

The paging carrier should be compensated for those functions it performs in terminating interchanged traffic—that is, the terminating switching and transport functions performed by the paging carrier. This is no different than traditional co-carrier arrangements, when two LECs interchange traffic. The carrier originating the call pays compensation to the carrier terminating the call. The paging carrier terminates calls originated on the LEC network in a functionally equivalent manner as other co-carriers terminating LEC-originated calls.

Establishing the appropriate compensation rate to the paging carrier is not difficult. LEC usage-sensitive costs are a simple, convenient surrogate for determining paging carrier costs. The costs underlying access charges represent the established market rate for switching and transport functions and provide a symmetrical compensation approach when used between LECs and paging carriers. Access charges, however, reflect average costs for voice traffic calls of about 3.5 minutes per call. Paging calls tend to be quite uniform in length, but shorter than toll calls—typically 15 seconds per call. Therefore, the access charges do not accurately represent CMRS carrier switching costs. Establishing a per call rate would produce a more reasonable paging compensation charge. Per call amounts should recover set-up costs and the relatively short amount of conversation time

for a paging call. Because access charges do not currently distinguish between set-up and conversation time costs, the cost of a 15-second (quarter minute) call is more than 25% of the per-minute access charge. In fact, it is closer to 80%-90% of the per-minute rate. Therefore, the per call charge rate should be .80-.90 times the one minute Local Switching plus Local Transport access rate.

## **Part IV**

### **Conclusion**

To achieve a fully competitive telecommunications market, co-carrier status must be acknowledged for all exchange service providers that provide functionally equivalent (or similar) services within that market. Technical differences among carriers based on directionality of traffic or call duration are irrelevant to co-carrier *status*, but are important to the method of compensation. In the developing CMRS competitive marketplace, all players must be afforded a fair advantage to compete. Discrimination against competitive providers—or even among competitive providers—does not serve the public interest. Compensation arrangements between LECs and CMRS providers determine the effectiveness of interconnection policies. Therefore, these arrangements must not promote the old policy of pricing above cost for services to other carriers in order to subsidize universal service. Promoting full competition requires that all co-carriers be entitled to receive compensation for the costs they incur in terminating calls received from other carriers.

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**Qualifications of Mark Drazen**

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I am a graduate of the Massachusetts Institute of Technology, with the degrees of Bachelor of Science in Mathematics, Master of Science in Electrical Engineering, and Electrical Engineer. In addition, I have taken courses in accounting at the graduate school of Business Administration at Washington University (St. Louis).

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I have testified in rate proceedings and court cases before federal agencies (the Federal Energy Regulatory Commission and Canada's National Energy Board), in 32 of the United States (Alabama, Alaska, California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Virginia, Washington, West Virginia, Wisconsin and Wyoming) and in three provinces in Canada (Alberta, British Columbia, Ontario and Saskatchewan). This testimony has covered all aspects of utility rate-making, including revenue requirements, rate base, operating income, valuation, cost of capital, cost of service and rate design.

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The firm of Drazen Associates, Inc. has provided design and consulting services since 1937. In 1972, the utility rate and economic consulting activities were taken over by Drazen-Brubaker & Associates, Inc.

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In 1995, the firm was reorganized. Drazen Consulting Group, Inc. now provides economic, strategic planning and regulatory consulting services to clients that include industry, schools, hospitals, utilities and government agencies. For regulatory proceedings, we regularly prepare studies relating to revenue require-

- 1 ments and rate design. We also prepare valuation, forecast and feasibility studies
- 2 relating to utility service, and assist in the negotiation of contracts for utility service.
- 3 Our experience encompasses most major utilities throughout North America.